

REQUEST FOR RECONSIDERATION

Applicants thank Examiner Faison for the helpful and courteous discussion of August 5, 2004. During the discussion, Applicants' U.S. representative presented arguments that one of the prior art references cited by the Office in rejecting the present claims (Stoffel) discloses compositions which must contain alkali metal cations in a concentration greater than the concentration allowed in independent Claim 35. No new matter is added.

The Office rejected Claims 35-40 in view of a combination of Nagai (U.S. 5,882,390); Yamamuro (U.S. 5,700,203); and Stoffel (U.S. 4,994,110) under 35 U.S.C. § 103(a). Applicants traverse the rejection on the grounds that none of the prior art references relied upon by the Office discloses an ink that must have an alkali metal content of less than 700 ppm.

In the Office Action of May 20, 2004, the Office states in the paragraph bridging pages 5 and 6 that the prior art discloses that it is preferable to have a sodium concentration of 500 ppm or less in an ink. The Office appears to extend this disclosure to encompassing all alkali metals and stated that the present claims which limit the composition to less than 700 ppm of alkali metals are obvious. Applicants submit that Stoffel does not disclose inks containing less than 700 ppm of alkali metal. Stoffel discloses that concentration of "undesirable cations such as sodium or potassium cations" (Abstract, line 5) should be less than about 500 ppm. However, Stoffel achieves the low sodium and/or potassium concentration by replacing these ions with a different ion. It is disclosed at column 2, lines 58-62:

"Briefly, the ink composition of the invention comprises a vehicle and an anionic dye containing a plurality of undesirable cations associated with each molecule, substantially all of the cations being replaced by lithium cations."

Thus, in Stoffel, inks are disclosed which have an alkali metal content of greater than 700 ppm. For example, the concentration of sodium and lithium cations of several inks is

disclosed in Table III in column 6 of Stoffel. Each of the inks disclosed in Table III has a total content of sodium and lithium ions that is greater than 1500 ppm.

Applicants submit that prior art inks which may have significant levels of alkali metals are unable to provide the printing performance of the ink of the claimed invention. In the Examples of the present specification (see Example 2 (pages 67-70) and Comparative Example 2 (pages 70-71)) it is shown that an ink having an alkali metal content of 15 ppm has a less corrosive effect on Pyrex glass than an ink having an alkali metal content of 940 ppm (Comparative Example 2). In the inventive example the variation of thickness of Pyrex glass in the ink jet printing apparatus was 0.18 μm , the variation amount of the thickness of silicon was about 0.16 μm at (100) plane, about 0.06 μm at (110) plane, and about 0.04 μm at (111) plane. In contrast the Comparative Example, which contains a higher level of alkali metals, showed a variation of thickness of the Pyrex glass of 11.2 μm , the variation amount of the thickness of silicon was about 6.0 μm at (100) plane, about 3.5 μm at (110) plane, and about 0.60 μm at (111) plane. It is evident from this comparison of inventive Example 2 and Comparative Example 2 that the presence of a high level of alkali metal ions in the ink may dramatically effect any glass-based ink ejection equipment which comes into contact with the ink.

Applicants have therefore shown that inks having a lower amount of alkali metal cations are able to perform in a substantially less damaging manner in ink jet printing apparatuses in comparison to the prior art inks.

Applicants submit that Stoffel nowhere suggests or discloses inks having an alkali metal content of 700 ppm or less. Therefore, the subject matter of independent Claim 35 cannot be obvious in view of a combination of Stoffel with Nagai or Yamamuro.

Applicants respectfully request the withdrawal of the rejection.

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Reply to Office Action of May 20, 2004

Applicants submit the amendment to the claims places all now-pending claims in condition for allowance. Applicants respectfully request the withdrawal of the rejections and the passage of all now-pending claims to issue.

REQUEST FOR REJOINDER

The Office required restriction of the present claims into several groups. Applicants note that original independent Claim 35 is drawn to an ink wherein the amount of alkali metal cations may not be greater than 700 ppm. Independent Claims 80, 100, 120, 140, 171, 191, 211 and 228 require the presence of the same ink recited in independent Claim 35 and further require that the concentration of alkali metal cations in the ink is 700 ppm or less. Applicants submit that independent Claim 35 is novel and not obvious in view of the prior art references relied upon by the Office. Independent Claims 80, 100, 120 and 140 are drawn to methods. Independent Claims 171 and 191 are drawn to liquid recording cartridges. Independent Claim 211 is drawn to an ink jet recording apparatus. Independent Claim 228 is a Jepson claim. Because each of independent Claims 35, 80, 100, 120, 140, 171, 191, 211 and 228 contain allowable subject matter as explained above, Applicants respectfully request the rejoinder and allowance of these claims.

Therefore, Applicants respectfully request the rejoinder of Claims 80-81, 100-101, 120-121, 140-141, 171-172, 191-192, 211-212 and 228-234.

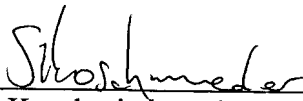
Respectfully submitted,

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